BGA Rework Station (WDS-420)

User's Manual V1.O

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1st Installation

In order to ensure the validity of BGA Rework Station, the installation should meet the following requirements.

a. Away from inflammable and explosives;

b. Away from water and other liquids;

c. Ventilated, dry place;

d. Stable and flat, free from tremor.

e. Less dust;

f. No heavy objects on the controlling box;

g. Not affected by airflow of air conditioner, heater or ventilator.

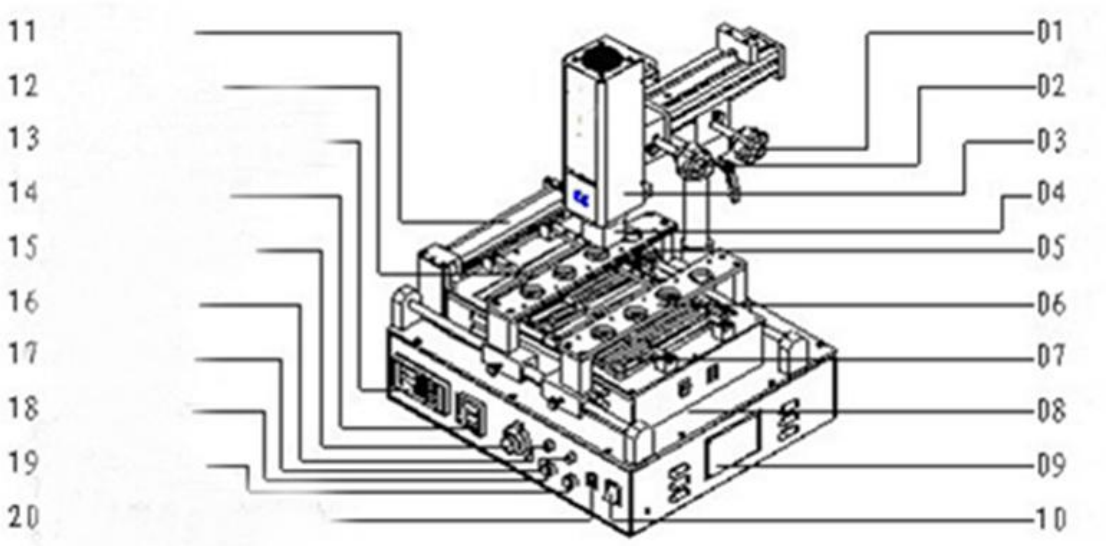
h. Leave a space of 30cm or more behind the rework station for the upper part to move and rotate.

2nd、Specifications

Total Power	3400W
Upper Heating Power	1000W
Lower Heating Power	Third zone: IR 2400W
Power Supply	AC 230V±10% 50/60HZ
Overall Dimension	L450*W420*H510mm
Locating Mode	V-shape card slot, PCB holder can be adjustable by X and Y axes with universal jigs.
Temperature Controlling	K-type thermocouple closed loop control, independent temperature control, precision up to ±3 degree
PCB Size	Max 320*310mm, Min 10*10mm
Weight of machine	26KG

3rd、main structure description

(1) Structure description



(2) Function introduction

No	Na	Function	Use method
1	Y-axis adjust of top heater	Adjust the top heater	Right-back，left-forward
2	Z-axis adjust of top heater	Adjust the top heater	Right-up，left-down
3	Heaters group	Heating BGA when welding	Adjust through Z-axis
4	Top Nozzle	Make hot air focus on BGA	
5	Lower temperature probe		
6	PCB board supporter	To hold up PCB board	Adjust to a suitable place
7	Lower heating board	Heating BGA when welding	
8	Start switch of lower heating		According to setting
9	nameplate		
10	power switch		
11	Crow-flow fan		
12	PCB splint	To fix the splint	
13	Top programmable thermostat		
14	Lower hot-air adjust	To hold up PCB board	
15	Top hot-air adjust	Make hot air focus on BGA	Turn left and right
16	Operation instructions		
17	Overtemperature instructions		
18	start button		
19	Stop button		
20	Cooling switch	Cool the PCB after heating	

4th 、Program setting and operating instructions

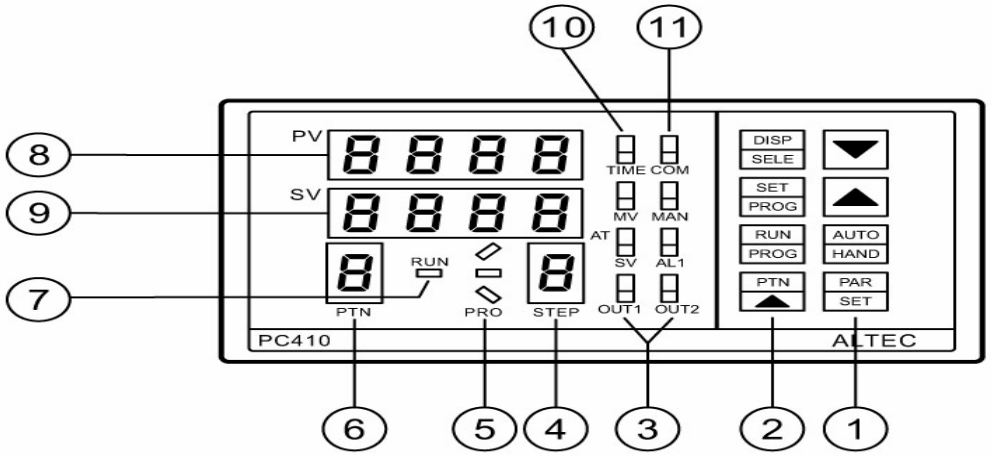
(1) Program setting: Meter

setting:

Top/bottom PLC are using same meter, some using.

PLC appearance:

PC410



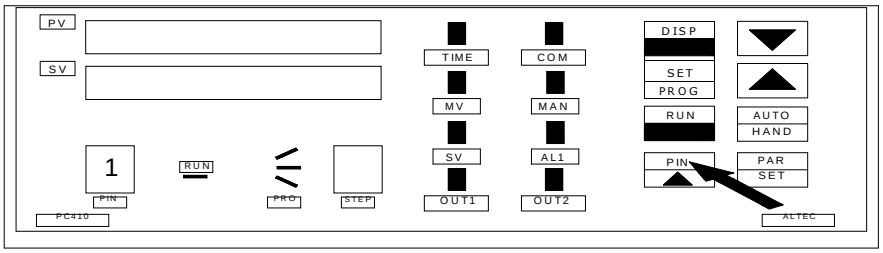
PLC panel instruction

1	PAR/SET	PAR/SET switch	6	PTN	Order of temperature profile
	AUTO/HAND	AUTO/HAND switch	7	OP3	Output 3
	▲	number increase		AT RUN	PID self setting Running show
	▼	number decrease	8	PV	The actual temperature
2	PTN ▲	Group number increase	9	SV/MV/TIME	The left time
	RUN/PROG	RUN/STOP	10	SV	Setting show
	SET/PROG	SET/STOP		MV	Output show
	DISP/SELECT	Display Select		PV	Actual temperature show
3	OUT1 OUT2	Output 1 Output 2	11	AL1	Alarming 1
4	step	Step number		MAN	Man control show
5	PRFILE	state of profile		COM	Communicating show

Setting process: First turn on the power supply

1) Choose temperature profile: (set groups) press PTN button (can save10groups temperatureprofiles),PressPTNgroupswillbechanged

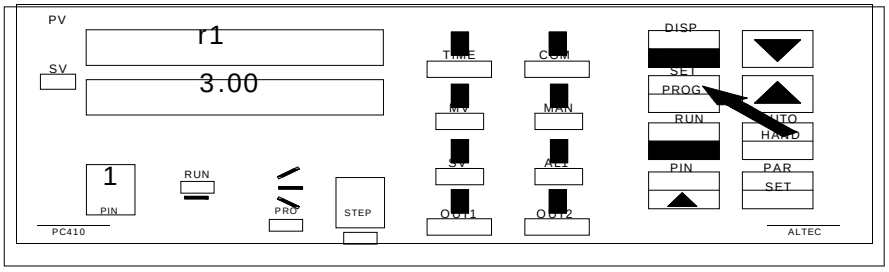
(1, 2,3,4,5 …0) choose one of them for temperature profiles (We take 1st group for example)



2) Preheating: Slope(r)

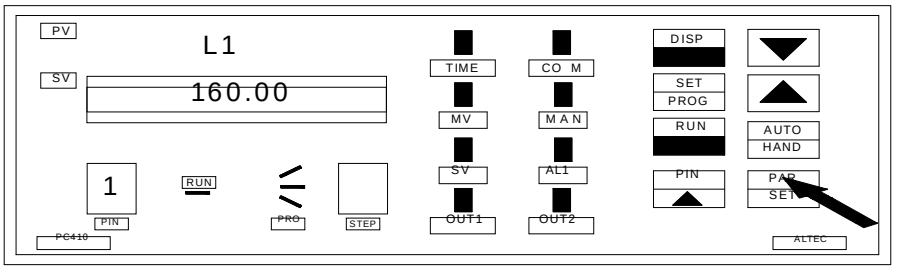
Press SET button enter into temperature curve,r1 stands for slope （the temperature will rise at the speed of 3℃ in one second）

3.00 stands for 3℃/second, press number increase button to adjust. Press PAR button enter next step.



3) Preheating: Temperature (L),

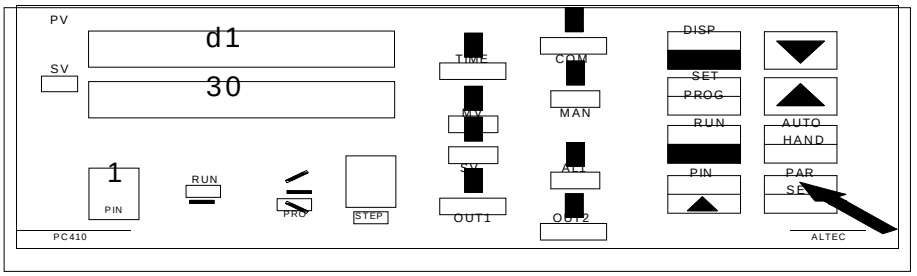
Press number increase button to adjust,160 stands for preheating temperature 160℃. Press PAR button enter to next step.



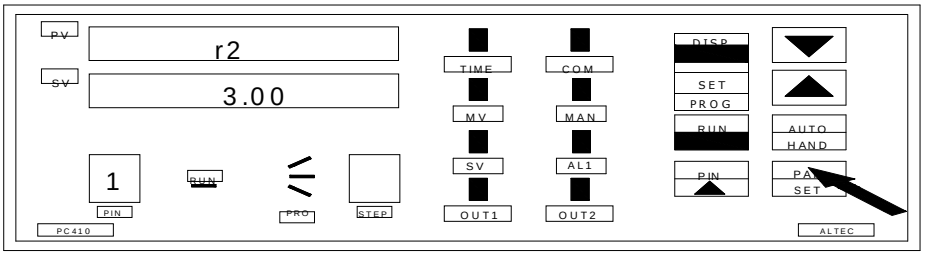
4) Preheating: Time (d),

Press number increase button to adjust, D stands for the time how

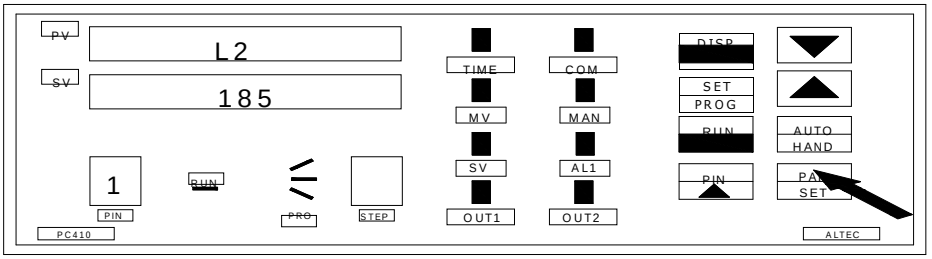
long the temperature stays at this stage. Press PAR button enter to next step.



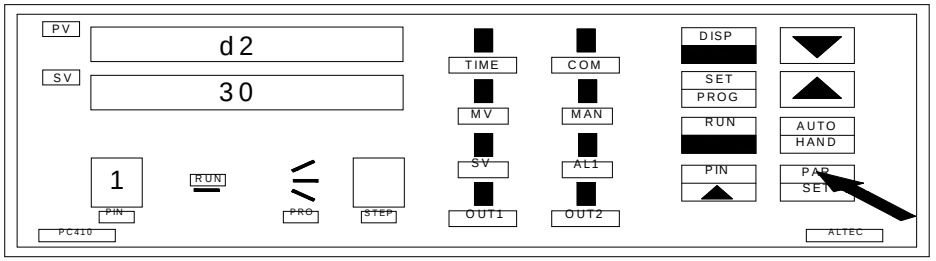
5) Preheating 2: Speed setting, press number increase button to adjust. Press PAR button enter next step.



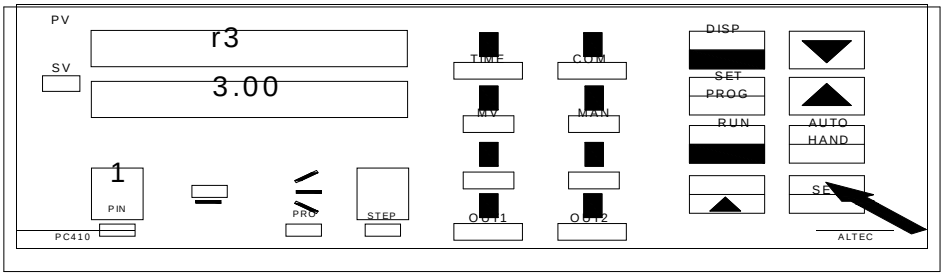
6) Preheating 2: Temperature setting, press number increase button to adjust. Press PAR button enter next step.



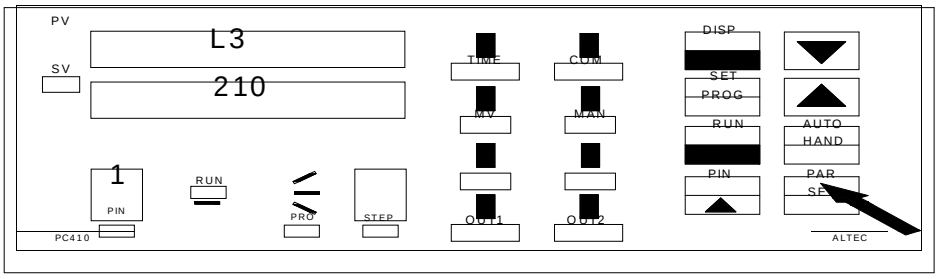
7) Preheating 2: Time setting, press number increase button to adjust. Press PAR button enter next step.



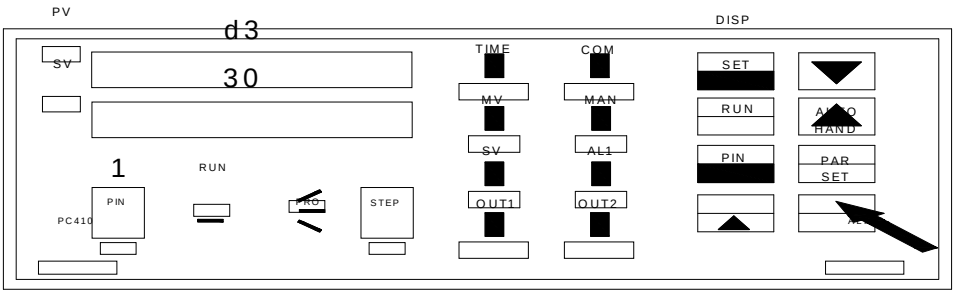
8) Preheating 3: Speed setting, press number increase button to adjust. Press PAR button enter next step.



9) Preheating 3: constant temperature setting, press up and down button to adjust. Press PAR button for confirm.

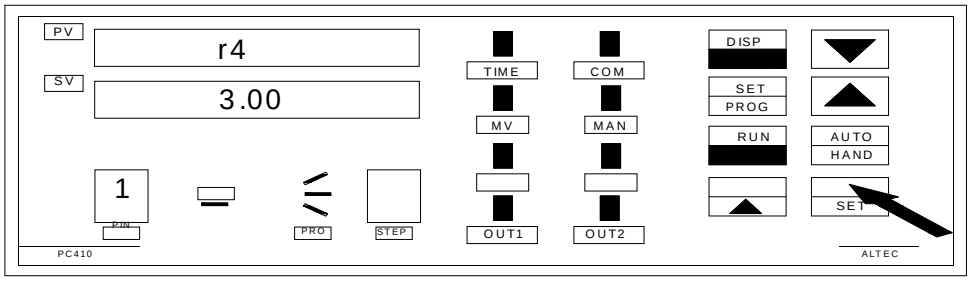


10) Preheating 3: constant temperature time setting; press up and down button to adjust. Press PAR button for confirm.

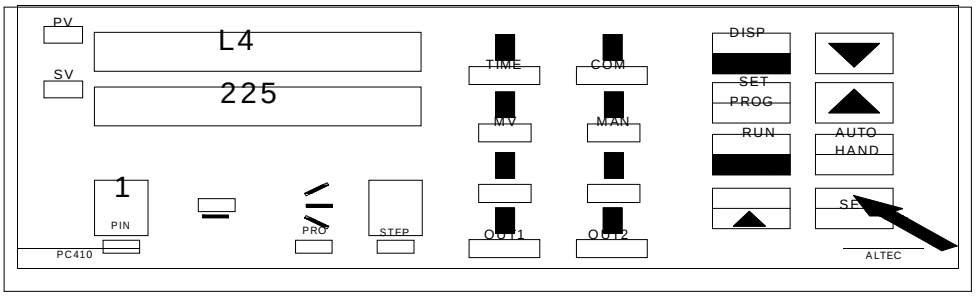


11 Welding 4, press number key to change, Press PAR button

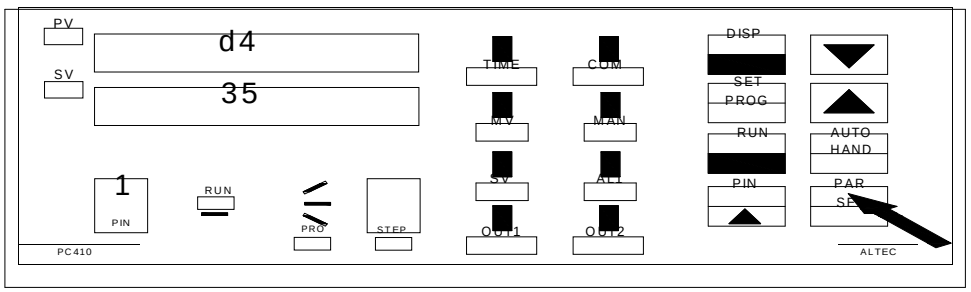
For confirm.



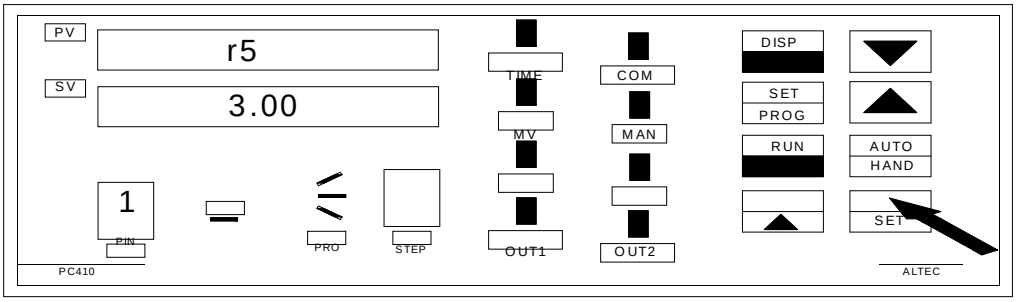
12) Welding 4: preheating constant temperature setting, press Up and down button to adjust. And PAR button confirm.



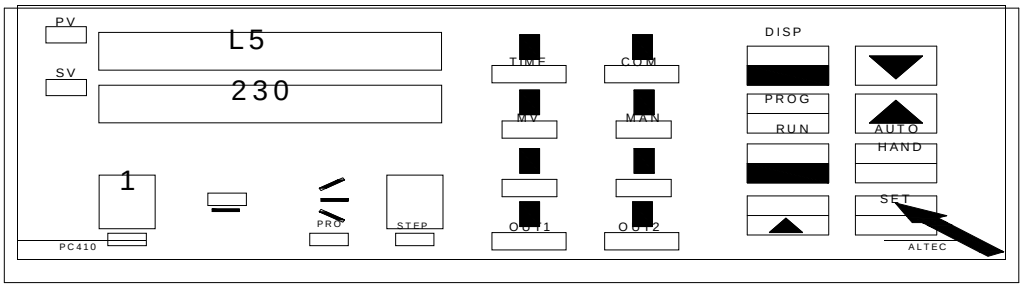
13) Welding 4: constant temperature time setting. press up/ down button to adjust. Press PAR button confirm.



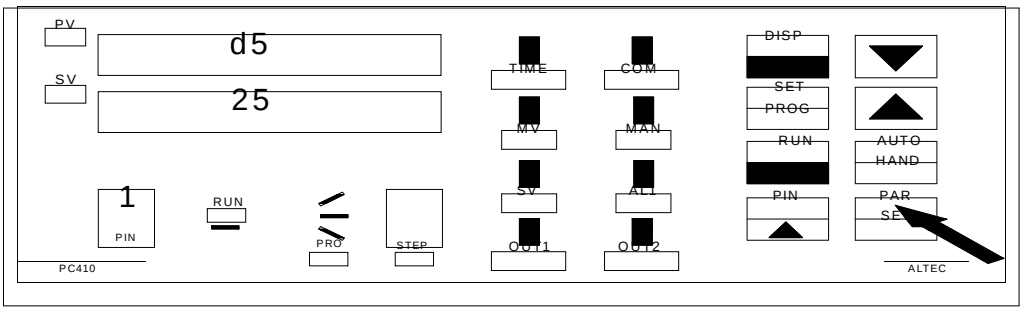
14) Welding 5: the speed of heating setting. Press up and down button to adjust. Press PAR button for confirm.



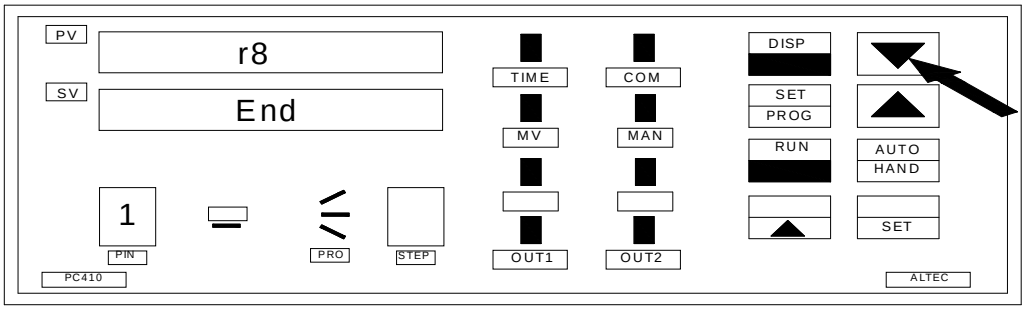
15) Welding 5: preheating constant temperature setting, Press up and down button to adjust. Press PAR button for Confirm.



16) Welding 5: Constant temperature time setting, press up and down button to adjust. And press PAR button for confirm.

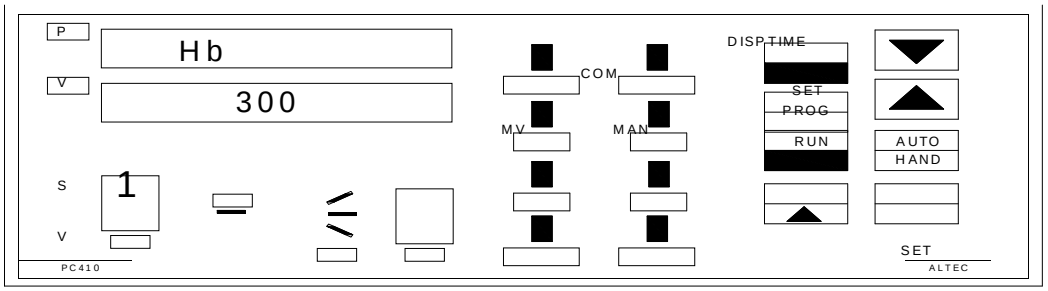


17) After finished Temperature curve setting, press Number Decrease button to show END for closing.



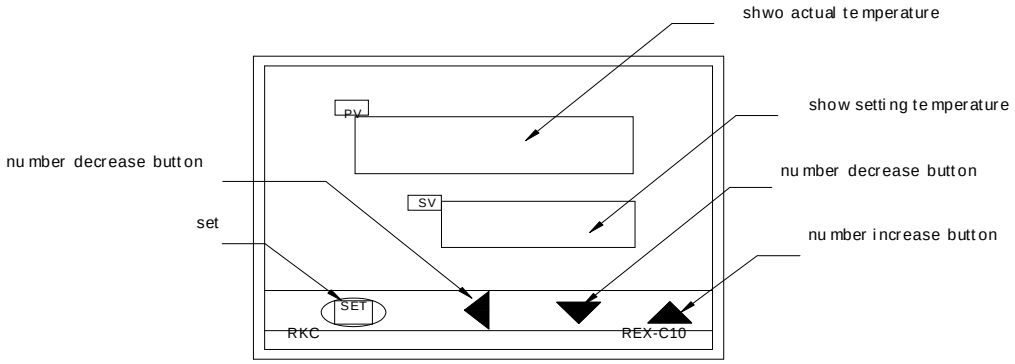
(Note: If you need to increase the temperature then press the upper button)

18) When the setting finished, it will show as the following picture. (This function stands for Max. temperature, do not modify)



REX--C10 Temperature controller:

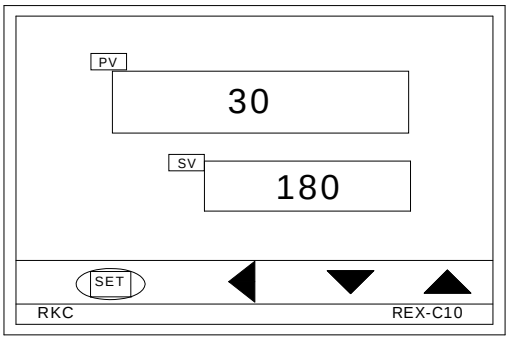
Thermostat setting; top over temperature controller; bottom over temperature controller are adopted REX-C10 temperature controller, so the usage of them are the same.



Setting Method:

1) Hold down the adjustment button for 1-2 seconds, then the setting of the temperature a bit flash, press numerical increase (decrease) key to change. And then move button to move the modified adjusted value of 10, and finally to 100, after finished, press the SET to confirm.

Infrared constant temperature settings Proposal setting ：180℃



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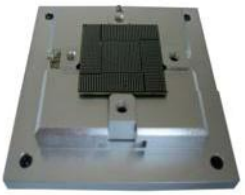
5th、Reballing Process

1. Fixed the BGA chip which need to be reballed on the under plate of the adjustable reballing kit, and then adjust the No-spring slider to fix the chip.



2. Choose the stencil according to the style of chip, then fix the stencil on the top cover of the adjustable reballing kit and lock the four M3 screws, cover the cap. Adjust the four screws of the under plate to fit for the height of the chip.

3. Check the alignment of the hole of the stencil and the welding spot of the chip, if it is in misalignment, then remove the cover and adjust the fixed slider until it is in alignment.

4. Lock the fixed slider of the two no-spring slider, take out the BGA chip and wipe a layer of solder

paste, fixed the chip on the adjustable reballing kit again, cover the cap.

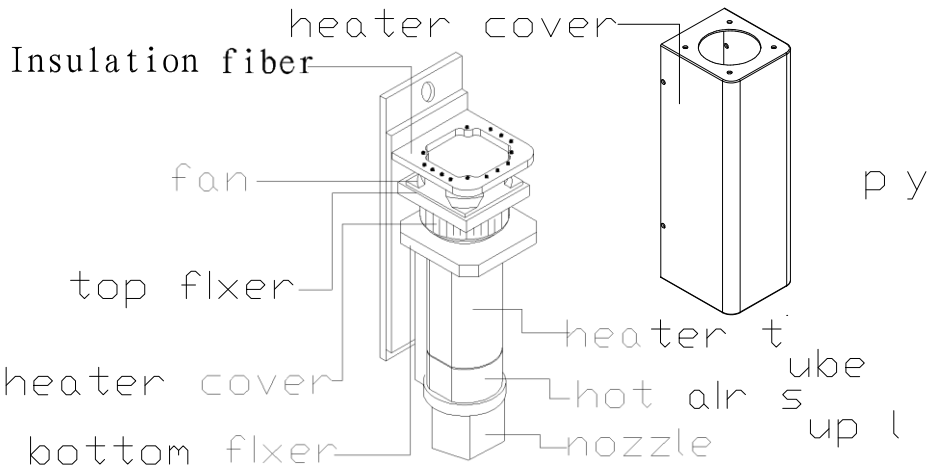
5. Put some solder balls into the kit, clutch and shake it to make all the balls stand on the welding spot, and at the same time, clear the superabundant balls.

6. Put the reballing kit on the desk, take out the top cover, and bring out the BGA cheap carefully, and check it whether there are some balls on the wrong place or not, if it is, then make it right with tweezers.

7. The way of making the balls fixed is using the Reballing machine, It can heat the cheap medially. Up to now, we finished reballing.

6th、Maintenance

（1） Upper heater：(Pictured)



1. The replacement of fan:

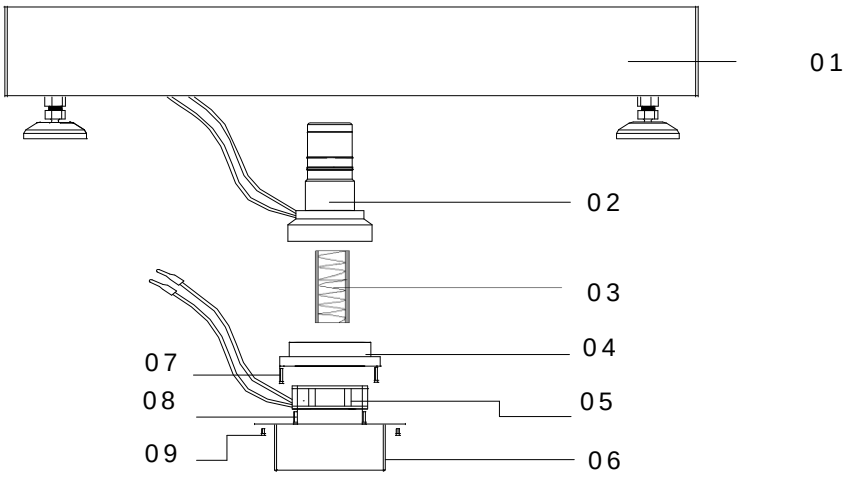
Remove the heater cover, and remove the insulation fiber block, then you can replace the fan.

2. The replacement of heating wire

Remove the heater cover 、the insulation fiber block and fan, remove the upper fixed block, then take

out the hot wire. Then it can be replaced.

(2) The lower (second temperature zone) heating wire replacement (pictured)



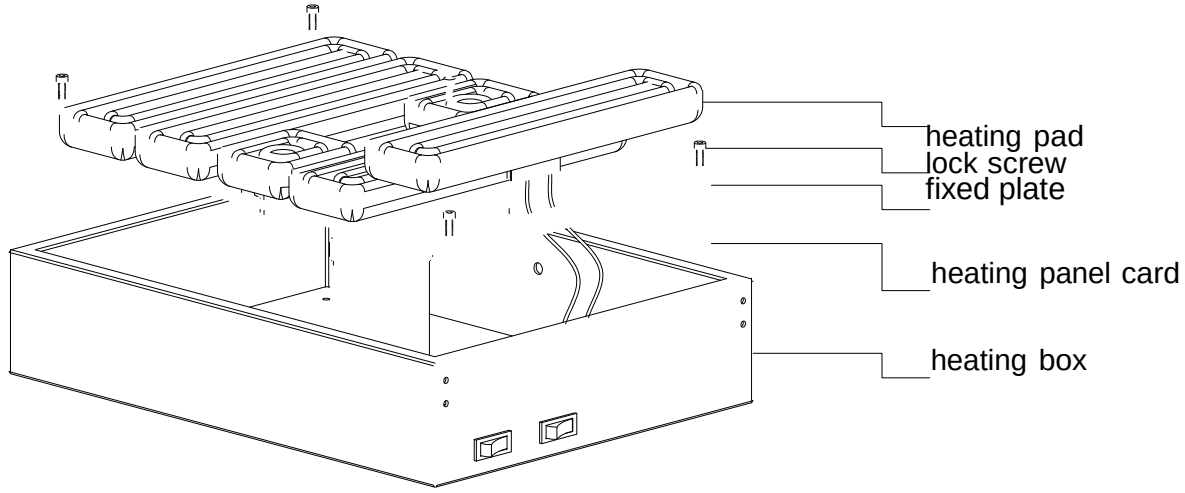
01 body	02 HeatingDuct	03 Heating wire
04 FanHolder	05 **fan**	06 Heater cover
07 FanHolder Bolt	08 Fan Bolt	09 Heater cover bolts

Replacement of the lower hot air heating wire:

1 Remove the heater bolts, and then remove the heater cover,

2 Demolition of fans and fan mounts, remove the hot wire. Then you can replace the heating wire,

（3）The bottom heating panel (pictured)



Replacement of heating plate:

1. Demolition of locking screws (4), remove the heating plate and the assembly of the fixed plate, placed on the table which is covered with a sponge (with heating plate surface facing down).

2. Removed the fixed heating plate card, you can break down the fixed plate and heating plate assembly, remove the heating plate then it can be replaced.

7th 、 Safety Precautions

The power supply of WDS-420 is AC230V, the temperature can arrive to 400℃. If you do not operate inappropriately, it will cause damaging to the machine or even to the operator. So you must strictly abide by the following matters:

1. Don't blow to the rework station directly when it is working, or there will be a negative difference from the surface of the heating board, thus some parts will be burnt out.
2. After it is started, the high temperature area should not touch any objects, or it will lead to a fire or explosion. The PCB and other parts should be put on the PCB bracket.
3. No vibration. Handle it gently.

4. Don't touch the heaters with your hands when it is working, or you will get hurt.

5. Don't use combustible spray, liquefied and flammable gas near the rework station after it is started.

6. Don't try to re-equip the machine, or there may be a fire or an electric shock.

7. There are high-pressure parts in the circuit box. Don't disassemble it.

8. If some metals fall in the rework station when it is working, turn off the power immediately. After it is cooled down, get the metal out, and clean the machine. If not, there may a smell when the machine starts working next time.

9. When the rework station's temperature rises abnormally or smokes, turn off the power and inform the service technicians to repair it. Turn off the power of the circuit box and the machine while moving the rework station. Hold the plug when we remove the wire or it will lead to a poor contact then the machine can't work very well.

10. Turn off the power when stop using it.

11. Don't put the rework station on the wires, or there may be a failure, a fire, or an electric shock.

12. Before you use the machine, you must read the instructions attentively.

Note: when the machine works, it will produce some smell. So ensure the comfortable, healthy and safe operation environment, please keep the air in circulation.

Under the following case, if it causes any damage, it will not in our guarantee;

1）Do not operate according to the condition of the environment and methods of operation that the manual book required;

2）The reason out of our product;

3）Not the transformation and maintenance of our company;

4）Do not operate accordance with the way of use that our company's products required;

5）The case that the temporal level of scientific and technological of our company was impossible to predict;

6）Natural disasters or man-made destruction and such non-responsibility of the Company premises, it will not in guarantee.

Normal BGA welding and disordering parameters

（for reference）

The temperature curve of lead welding

41*41 **the temperature setting of the BGA welding：**

	preheating	insulation	heating	welding1	welding2	cooling
upper	160	185	210	235	240	225
time	30	30	35	40	20	15
bottom	160	185	210	235	240	225
time	30	30	35	40	20	15
slope	3．0	3．0	3．0	3．0	3．0	3．0
IR	180					

38*38 **the temperature setting of the BGA welding：**

	preheating	insulation	heating	welding1	welding2	cooling
upper	160	185	210	225	235	215
time	30	30	35	40	20	15
bottom	160	185	210	225	235	215
time	30	30	35	40	20	15
slope	3．0	3．0	3．0	3．0	3．0	3．0
IR	185					

31*31 **the temperature setting of the BGA welding：**

	preheating	insulation	heating	welding1	welding2	cooling
upper	160	180	200	215	225	215
time	30	30	35	40	20	15
bottom	160	180	200	215	225	215
time	30	30	35	40	20	15
slope	3．0	3．0	3．0	3．0	3．0	3．0
IR	180					

The upper is the reference temperature of the lead BGA。

The temperature curve of Lead-free welding

41*41 the temperature setting of the BGA welding

	preheating	insulation	heating	welding1	welding2	cooling
upper	165	190	225	245	255	240
time	30	30	35	55	25	15
bottom	165	190	225	245	255	240
time	30	30	35	55	25	15
slope	3．0	3．0	3．0	3．0	3．0	3．0
IR	210					

38*38 the temperature setting of the BGA welding：

	preheating	insulation	heating	welding1	welding2	cooling
upper	165	190	225	245	250	235
time	30	30	35	45	25	15
bottom	165	190	225	245	250	235
time	30	30	35	45	25	15
slope	3．0	3．0	3．0	3．0	3．0	3．0
IR	210					

31*31 the temperature setting of the BGA welding：

	preheating	insulation	heating	welding1	welding2	cooling
upper	165	190	220	240	245	235
time	30	30	35	40	20	15
bottom	165	190	220	240	245	235
time	30	30	35	40	20	15
slope	3．0	3．0	3．0	3．0	3．0	3．0
IR	210					

The upper is the reference temperature of the lead-free BGA

Such as set 0 when the demolition of the cooling section of BGA